

Claims

1. Turbine system (1), particularly a steam turbine system with at least two turbine stages (2, 3a, 3b, 3c), with each of the turbine stages (2, 3a, 3b, 3c) having a turbine rotor (5) extending along a main axis (4), with the turbine rotors being rigidly connected to each other, with at least one of the turbine stages (2, 3a, 3b, 3c) having an inner casing (8a, 8b, 8c) enclosing the turbine rotor (5), with the inner casing (8a, 8b, 8c) being supported in a bearing area (10) so that it can be axially displaced, and with a thrust element (9, 9a) for transmitting an axial force for an axial displacement being provided, that is connected to the inner casing (8a, 8b, 8c), characterized in that the bearing area (10) has a bearing device (11) with a static friction that is so low that the axial offset that spontaneously occurs when the static friction is overcome when displacing the inner casing (8a, 8b, 8c) is less than 2 mm.

2. Turbine system (1) in accordance with Claim 1, characterized in that the bearing device (11) is designed to be free of static friction.

3. Turbine system (1) in accordance with Claim 1 or 2, characterized in that the bearing device (11) has a hydrostatic bearing (12), that is supplied with a pressurized operating means (B), particularly oil under pressure, with a sliding film (13) being formed.

4. Turbine system (1) in accordance with Claim 3, characterized in that the sliding film (13) is provided in a gap (16), with the height (H) of the gap (16) being adjustable relative to the pressure (p_B) of the operating means (B).

5. Turbine system (1) in accordance with one of the preceding claims, characterized in that the bearing device (11) is a rolling bearing (17) with an number of rolling bodies (19, 19a, 19b) arranged along the axial direction of displacement (18) relative to each other.

6. Turbine system (1) in accordance with Claim 5, characterized in that a contact surface (21) of the rolling body (19, 19a, 19b) taking a normal force (F_N) during a displacement operation has a cylindrical jacket-shaped geometry with a radius of curvature (R).

7. Turbine system (1) in accordance with Claim 5, characterized in that a rolling body (19, 19a, 19b) has a spherical or cylindrical geometry.

8. Turbine system (1) in accordance with one of the preceding claims, characterized in that the bearing area (10) has a supporting arm (27) of the inner casing (8a, 8b, 8c) and a bearing support area (28), with the supporting arm (17) being supported on the bearing support area (28) by means of the bearing device (11).

9. Turbine system (1) in accordance with Claim 8, characterized in that the bearing device (11) has a lever (29) by means of which the supporting arm (27) has a swiveling connection to the bearing support area (28).

10. Turbine system (1) in accordance with Claim 8 or 9, characterized in that the inner casing (8a, 8b, 8c) is connected to a damping device (30) to dampen vibrations.

11. Turbine system (1) in accordance with one of the preceding claims,
characterized in that one medium-pressure steam turbine stage (2)
5 and at least two low-pressure steam turbine stages (3a, 3b, 3c) each
having an inner casing (8a, 8b, 8c) are provided, with the turbine
stages (2, 3a, 3b, 3c) being arranged along the main axis (4), with
the inner casing (8a, 8b, 8c) being connected to the thrust element
(9, 9a) and supported in a bearing area (10) with a bearing device
10 (11).

12. Turbine system (1) in accordance with Claim 11,
characterized in that the medium-pressure steam turbine stage (2)
has an outer casing (14) that is connected via a thrust element (9a)
15 to the inner housing (8a) of the low-pressure steam turbine stage
(3a) arranged downstream in an axial direction, and a fixed bearing
(15a) connected to the outer casing (14) that forms the axial fixed
point (20) for a thermal axial expansion.

20 13. Turbine system (1) in accordance with Claims 11 or 12,
characterized in that at least one of the low-pressure steam turbine
stages (3a, 3b, 3c) has an exhaust steam casing (31) with a
diffusion area (A) of 10.0 m^2 to 25 m^2 , in particular 12.5 m^2 to 16
 m^2 .